REMARKS

Applicants have carefully reviewed the Office Action mailed July 13, 2004 and offer the following comments in response thereto.

As a preliminary matter, Applicants bring to the Examiner's attention that formal drawings were submitted on July 26, 2001, but there has been no indication of approval of the drawings by the Examiner or the Official Draftsman. Applicants request that the Examiner/Official Draftsman indicate approval or non-approval of the formal drawings with the next PTO communication.

Elections/Restrictions

Applicants reaffirm the election of April 8, 2004 and withdraw claims 70, 72, 108 and 109 pursuant thereto.

Claim Rejections - 35 U.S.C § 102

Claims 1-33 and 54-59 were rejected under 35 U.S.C. §102(e) as being anticipated by Cohenford et al. (U.S. Patent No. 6,146,897). Applicants respectfully disagree and traverse the rejection.

Cohenford et al. discuss a method of analyzing cellular abnormalities using spectrographic analysis. Cohenford et al disclose various methods of preparing a reference sample for comparison to an in vitro measurement sample. The samples are fixed, preserved, or stained. (Column 8, lines 43-44). Non-diagnostic debris may be removed from the samples. (Column 8, lines 45-46.) The sample may be dried to remove moisture which interferes with the infrared spectra. (Column 8, lines 60-61.) Even if "samples are utilized as isolated, and without further preparation" as suggested in an alternative method, moisture is lost during the collection process. (Column 8, lines 46-47.) All of these techniques alter the shape of the spectra.

In contrast, amended claim 1 claims a reference sample "where the reference sample and the measurement sample absorb light at each of the selected wavelengths in a manner to produce similarly shaped spectra over the wavelengths measured" and "wherein the measurement sample has the spectral characteristics of an in vivo sample". An in vivo sample is a turbid medium

where the spectral shape is formed not only by the concentration of molecular species, but by the pathway of light through the medium.

The reference samples of Cohenford et al. are not prepared with respect to the pathway of light through the medium and so produce spectra which may have a significantly different shape than an in vivo measurement sample, which reduces measurement reliability. As Cohenford et al. do not disclose reference samples which maintain the same optical characteristics of an in vivo measurement sample, Applicants submit that claim 1 is in condition for allowance. Applicants submit that claims 2-33 are also in condition for allowance as they depend from claim 1 and contain additional elements. Applicants submit that claims 54-59 are in condition for allowance for similar reasons.

Claims 34-40, 60-65, 68, 69, 81-83, 85-87, 103-107, 110, 111 and 113 were rejected under 35 U.S.C. § 102(e) as being anticipated by Fellows (U.S. Patent No. 6,078,042). Applicants respectfully disagree.

Fellows discloses a calibration standard which can be used to simulate an absorption spectrum. "The calibration standard of the invention is an assembly of integers which are selected to produce a required effect." Column 2, lines 2-3. In contrast, the reference sample of claim 34 is constructed to simulate "the optical interaction between the measurement sample and the optical system". This is a higher-order simulation than that disclosed by Fellows. It simulates not only the desired spectrum, but the way the measurement sample produces that spectrum. By simulating the way the measurement sample produces a spectrum, greater accuracy can be achieved. As the simulation of the optical interaction between the measurement sample and the optical system is not disclosed by Fellows, Applicants submit that claim 34 is in condition for allowance. As claims 35-40 depend from claim 34 and contain additional elements, Applicants submit that these claims are in condition for allowance as well.

Similarly, amended claim 60 recites "the reference sample producing a non-stepwise reference spectrum that is optically similar to the representative measurement sample." Fellows only discloses calibration standards that can produce stepwise reference spectra because the calibration standard is a combination of discrete integers. See Figure 6. In contrast, the reference sample claimed in claim 60 produces non-stepwise reference spectra that are more optically similar to the spectra produced by the measurement samples and thereby can produce

more accurate results. See Figure 7, for example. Applicants therefore submit that claim 60 is in condition for allowance. As claims 61-65, 68-69, 81-83, 85-87 depend from claim 60 and contain additional elements, Applicants submit that these claims are in condition for allowance as well.

Claim 103 recites "the optical sampling compartment containing water and a diffusely reflective or scattering media." Calibration standard 1 of Fellows does not contain water. Applicants therefore submit that Fellows does not anticipate the claim. As claims 104-107 depend from claim 103 and contain additional elements, Applicants submit that these claims are in condition for allowance as well.

Claim 110 recites "a reference material having a first optical similarity to the representative measurement sample" and "a structure for containing the reference material in a geometric configuration adapted to give the reference device a second optical similarity to the representative measurement sample." No components of calibration standard 1 meet these limitations. Disks 20 "are made of a material that is transparent in the spectral operating range of the infrared absorption gauge" and thus do not have a first optical similarity to the measurement sample. (Column 4, lines 50-52.) Likewise, neutral density filter 23 and mirror 24 are "spectrally unselective to the infrared radiation" and thus do not have a first optical similarity to the measurement sample. (Column 5, lines 10-11.) Filter 22 has "spectrally selective infrared transmission and reflection characteristics" and thus may have a first optical similarity. But Fellows does not disclose a structure that gives the filter a second optical similarity to the measurement sample. Applicants thus submit that claim 110 is not anticipated by Fellows and is in condition for allowance. As claims 111 and 113 depend from claim 110 and contain additional elements, applicants submit that these claims are in condition for allowance.

Claim Objections

Claims 66, 67, and 112 were objected to as depending on rejected base claims. As Applicants submit that the base claims are in condition for allowance, Applicants submit that these claims are also in condition for allowance.

Reexamination and reconsideration are respectfully requested. It is respectfully submitted that all pending claims are now in condition for allowance. Issuance of a Notice of Allowance in due course is requested. If a telephone conference might be of assistance, please contact the undersigned attorney at (612) 677-9050.

Respectfully submitted,

Craig Gardner et al.

By their Attorney,

Date: October 13, 2004

Brian N. Tufte, Reg. No. 38,638
CROMPTON, SEAGER & TUFTE, LLC
1221 Nicollet Avenue, Suite 800
Minneapolis, MN 55403-2420
Telephone: (612) 677-9050
Facsimile: (612) 359-9349